

NEWS OF INTEREST
TO THE CAR
OWNERDENATURED ALCOHOL
PREVENTS FREEZING

Leaves the Proper Mixture
With Water — Solution
Should Be Tested Occa-
sionally.

"For the winter months a radiator cover is recommended with an opening in the front that can be dropped down while the motor is in use, but when the car is standing idle may be closed to keep the cold air from the motor and radiator.

"A further aid in preventing freezing is found in the many preparations containing chlorine and glycerine, sold by automobile accessory houses. Chlorine is detrimental to the solder in the radiator, while glycerine is detrimental to the rubber hose connections at the bottom and top of the radiator, which connect the radiator to the motor.

"Denatured alcohol is the best preventive against freezing that can be used, but even this should be used in quantities, proportionate to the water supply of the motor and radiator.

"Alcohol should be mixed with water not only in accordance with the capacity of the cooling system but with relation to the varying temperature.

"To save excessive use of alcohol, which is not only expensive, but causes overheating, the autoist should get in touch with the nearest dealer and find out from him the number of gallons of water the entire cooling system will hold, and the proper mixture of alcohol and water.

"For instance, at a freezing temperature, down to zero, alcoholic solution should be used in proportion of 25 per cent alcohol to 75 per cent water. At a temperature to seven below zero 30 per cent alcohol and 70 per cent water. At fifteen degrees below zero thirty-five per cent alcohol and 65 per cent water. At twenty-two below zero 40 per cent alcohol and 60 per cent water.

"The solution should be tested occasionally for evaporation by the use of a hydrometer for specific gravity. If one of these instruments is not available, then precaution should be taken to replace the solution frequently.

"It is disappointing and expensive for one to go to a garage on a cold winter morning to find that on account of lack of precaution the water pump of his motor car is frozen, or possibly the housing of the pump burst or the radiator frozen and burst or the water jackets in the cylinder frozen or burst. All of these things cause long delays and expensive repairs," says George C. Gurney, of the King Motor Car company. This is especially true where the temperature has been hovering around the zero mark.

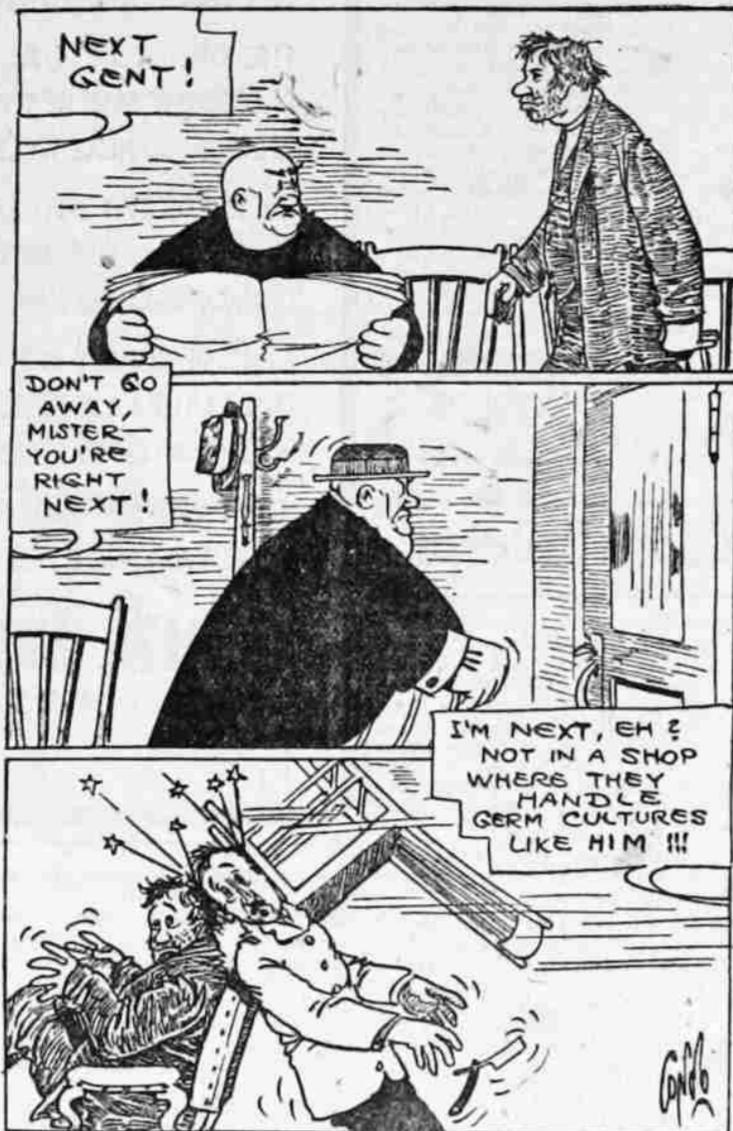
"Automobile engineers strive to build motors of the thermo-siphon type and also of the water pump type so that they will be of maximum efficiency during all periods of the year;—summer and winter.

"The cylinder walls of a motor get exceedingly cold in the winter while the car is standing in an unheated garage over night. Also, the piston heads and water in the cooling system are so cold that an enormous number of heat units are used up in order to warm these parts.

"When the motor is cold it takes some little time, with the motor running slowly, to reach the points where it exerts its full power. This point is reached when the water has become heated and properly circulated and the oil has become thin for proper lubrication of the pistons, bearings, etc.

"Power is lost in the motor by over-

OUTBURST OF EVERET TRUE



heating as well as by overcooling. For the winter months an anti-freeze solution in proper quantity should be put in the motor and kept therein until the freezing weather is past.

CARBURETION PLAN
FOR MOTOR CARS

Radical changes in gasoline engine construction must be made in the near future if the war and commercial needs of the country, depending upon gasoline for fuel, are to be maintained at their highest efficiency. W. P. Depepe, a mechanical engineer, told the members of the Metropolitan section of the Society of Automotive Engineers at their monthly meeting last week at the Automobile club of America.

The problem of obtaining a reasonable amount of efficiency with the grade of gasoline now in use has already become sufficiently important to arouse the attention of the leading automobile engineers, and various methods of adapting the carburetion system to give maximum results with the low-grade fuels are being heralded with more or less success.

Mr. Depepe made no attempt to disguise the fact that the motorist will probably never again see the day of the high-grade gasoline which was so readily obtainable before the outbreak of the war. At that time this fuel for

the internal combustion engine represented barely 5 per cent of the entire crude oil production. The tremendous increase of automobile use in America supplemented in recent years with its demand for war uses has forced the oil refiners to use about 18 per cent of the total production for commercial fuel. Naturally such a large percentage means poorer quality. This is the grade of gasoline that the automobile owner is now using.

This is a condition that must be recognized and met, said Mr. Depepe, by the automobile manufacturing industry. He did not stop there, but went far as to affirm that by improved methods of carburetion design it would be possible to use as commercial fuel from 40 to 50 per cent of the crude oil production.

Mr. Depepe based his main argument upon the necessity of obtaining an additional supply of gasoline fuel, not so much by conserving its use under existing methods, but by finding means to use a much larger proportion than is now available without any decrease in efficiency. Indeed, he showed that it would be possible to obtain greater efficiency with the lower-grade fuels.

"All cars now average about twelve miles per gallon of gasoline," said Mr. Depepe. "They can average from eighteen to twenty miles by better carburetion, using the low-grade fuels, representing about one-half gasoline and one-half kerosene. Trucks now average from four to five miles per gallon. They can be made to average from six to eight miles."

The crude oil production of the United States is now about 310,000,000 barrels. The present world's production is something less than 500,000,000 barrels. The demands upon America by our allies, it was stated, indicate that for 1918 about 50,000,000 barrels are needed in excess of the annual production, and this will be obtained by breaking in on the storage supply. Of the 310,000,000 barrels production only about 50,000,000 to 55,000,000 barrels, representing 18 per cent can be used as gasoline for motor engines.

"Over 5,000,000 motor cars, trucks, etc., of which over 4,250,000 are in use in this country, are the foundation on which are now built the transportation systems of the world," said Mr. Depepe. "Gasoline engines furnish the prime motive power for two-thirds of all the mechanical power now serving the civilized world. In addition there will be supplied from this country about 30,000 airplanes, each of 200 horsepower or over, and using twenty gallons of high-grade gasoline per hour if they deliver anything like their horsepower. At an average of five hours' service per day, there is an additional demand next year of 70,000 barrels of good gasoline per day, to say nothing of over 50,000 military trucks and thousands of commercial vehicles.

"We can no more cut down the use of gasoline engine vehicles than we could cut down the use of steam and electric car lines. A way must be found to make more commercial gasoline out of crude oils and also secure more useful work out of every gallon of oil now furnished or we are going to get some unpleasant jolts in the near future."

Divested of excessive technicalities, Mr. Depepe's explanation of the necessary engine design for the lower-grade fuels was substantially as follows:

The gas engine world using oils refined in high temperatures in the oil refinery is still trying to carburetor oils in low temperature carburetor methods, which means that wet mixtures of oil and air go into the cylinders, using the cylinders as inefficient vaporizers, and the flame spreads after ignition as the gasification means. This is too wasteful, and limits the ability to secure fuel economy in the engines and limits the oil refiner to the use of less than 20 per cent of his crudes for motor fuels, instead of 40 to 50 per cent of all his fuels.

The next great improvement in gas engines is to operate them as super-heated gas engines, a method whereby the engines receive super-heated homogeneous fixed dry gases before the ignition by spark. This sort of a fluid gas instantaneously flames completely at the moment of highest compression and before the piston has had time to get much past the top dead center of compression stroke.

Super-heated homogeneous dry gas

Experts
Commend Us—

Because the Utah Tire Repair Company has the only plant in the Rocky Mountain states that can handle tire rebuilding as well as tire repairing, attention of tire experts throughout the west is being focused on this corporation's growing business. The work that has been done has won the commendation of these men. Letters praising the rebuilding or retreading work of this plant have been frequent, recommendations have been numerous from these experts. During the past week we received the following from the offices of the Fisk Rubber Company, one of the greatest tire companies of the world—

READ THIS LETTER

FROM 2 702 10-16

FROM
The Fisk Rubber Company
OF N. Y.

Dec. 17, 1917.

Hansen Garage,
Shoshone, Idaho.

Gentlemen:

We are just in receipt of a letter from our Mr. Tripp, and he stated that you would like to have us recommend someone to you who can do first-class retreading work. The Utah Tire & Repair Company of Ogden, Utah is equipped better to do this class of work than any one else in the state. In addition to their regular equipment, they have just recently spent about \$4,000.00 for complete moulds for retreading all sizes of cord tires.

They can turn this work out in such perfect condition, that it can scarcely be told from brand new tires. They have had quite a little experience doing this work, and have a better reputation than anyone else in the state for doing this high grade work. You can be assured, that any work that they may do for you will be turned out in first-class shape.

Very truly yours,

MANAGER SALT LAKE CITY BRANCH.

Our Tire Rebuilding Work

Equipped with the very best machines, molds and material for building tires, this company is now able to do work that can not be even considered by others in the Rocky Mountain states—including Utah, Idaho, Nevada, Wyoming, Colorado or Montana. Automobile owners of Ogden, Salt Lake, Logan and Provo, even from Idaho and Wyoming, have been using tires built in this plant. They have found them absolutely satisfactory. We will be glad to give you names of these automobile owners, so you can make inquiry as to the merit of tires rebuilt or retreaded "The Utah Tire Way."

UTAH TIRE REPAIR CO.

Telephone 794

K. E. SMITH, Manager

2582-84 Washington

Automobile Production
Curtailed--

Prices must go up and up

America's low prices on automobiles have always been dependent on quantity production. Now the production promises to be alarmingly curtailed and perhaps cut to almost nothing next year. The Government will, naturally, get first call on raw materials for war and agricultural purposes. That means a sure shortage of automobiles and prices 50 per cent higher, possibly even double. And shrewd buyers are waking up to this situation now. They are securing their cars immediately. Even now they face a serious situation. When they start out to buy they find that many makers have already made price increase after price increase without notice within a few weeks.

Forty Horse Power Four \$1050
Fifty Horse Power Six \$1385

F. O. B. Detroit.

You, too, will find the same condition—but if you act quickly you can still secure a Studebaker with high quality fully maintained and at prices several hundred dollars below cars of equal quality.

Other manufacturers are adding the new 3 per cent Excise Tax to their quoted prices but for the present the above prices include this tax.

When the few cars which we have in stock are sold, a great automobile buying opportunity will be gone. It is doubtful if it will ever be duplicated within a lifetime. Come in today and make your selection.

\$40.00 War Tax After January 1, 1918.

**MACK-ROBINSON
AUTO COMPANY**

2440 Grant

Phone 604

methods of operating engines means that the world tomorrow with super-heated gas engines can use a mixture of present gasoline with present kerosene, half and half, which doubles motor fuels over night, in fact. Added to this is 50 per cent or more of useful work per gallon of that hybrid mixture.

Further, it will enable oil refiners to triple the total volume of motor gasoline by the cracking methods which the bureau of mines has so carefully tested, to show the way for better utilization of crude oils in the refinery.

"We may shut our cars and say impossible or that it cannot be done," added Mr. Depepe. "But what must be ultimately is simply to do these simple things. Because they involve large sums does not offer any called reason why they cannot be done. Like Marshall Joffre's remark, gasoline saved Verdun—so it will be finally if we win this world's war. Car makers and gas engine men must recognize the necessity of changing their carburetor ideas. It will also mean that within four or five years all existing motor cars will be scrapped by wear and tear and inability to use the low-grade fuels, and like old clothes which have served us well, will be thrown away, but the metals will be available for new machines."

THE PRESIDENT'S
HEARTY APPROVAL

Commendation from the head of the nation himself is given to the American Automobile association because of the action of its contest board in discontinuing to issue sanctions for motor

contests during the period of war exigency. President Woodrow Wilson, in a communication directed to John A. Wilson, chairman of the A. A. A. military preparedness committee says:

"I am very glad indeed to learn that it is the purpose of the American Automobile association to stop automobile racing until after the close of the war. It is so destructive of materials and involves so great a consumption of gasoline that I think every man who cares for the proper fulfillment of our duties during the war and the necessary conservation of resources which the performance of those duties involves must applaud the action of the association in this matter."

(Signed) "WOODROW WILSON."

Need of skilled operators of motor trucks and passenger vehicles, as well as mechanics, brought about the action taken, which will release over 1000 capable men for motorizing war work. In preamble and resolution the A. A. A. contest board thus sets forth the situation:

"Whereas, Our country is in a state of war in which our entire available man power is needed for national activities; and

"Whereas, The national need for skilled workmen in numbers greater than it is possible to furnish is urgent; and

"Resolved, That it is the sense of the contest board of the American Automobile association that it will not sanction automobile contests during the period of the war exigency; and that during the aforesaid period the rules of the board shall be suspended."

The president of the A. A. A., Dr. H. M. Rowe, former President John A.

Wilson, Executive Chairman A. G. Batchelder, Treasurer H. A. Bonnell and other national officers were in attendance at the meeting and approved the decision of the contest board, which will go into effect January 1.

Practically all of the big speedways in the country are in accord with the action taken, several of them leaving the matter of continuance entirely to the judgment of Chairman Richard Kennerdell and his fellow members of the A. A. A. contest board.

STOP THE LEAKS
IN RADIATORS

Radiator leaks constitute one of the most expensive and annoying drawbacks to winter motoring, and it is the contention of Ray Long, chief engineer of the Columbia Motors company, that this trouble will be greatly lessened if not entirely eliminated when automatic motor temperature control comes into more general use.

"Equipping a motor car with radiator shutters and a thermostat to control them will not eliminate radiator leaks unless the car owner takes the precaution to add a sufficient quantity of alcohol or other anti-freezing mixture to his radiator water," said Mr. Long. "But this equipment, we find by experience with Columbia cars, helps the anti-freeze mixture wonderfully, especially when the latter is not combined with water in sufficient quantity. "In ordinary city driving it frequently happens that the engine does not run long enough to warm up the cooling mixture. This means, unless there is an abundance of anti-freezing mixture in the radiator, that the latter

will freeze shortly after the car stops. With radiator shutters, a very short trip is sufficient to thoroughly warm the radiator water, which means that a longer stop is permissible without freezing. It frequently happens that the difference of a very few degrees in water temperature means a frozen radiator and a subsequent leak."

HOW TO ADJUST
COMMUTER BRUSHES

When the commutator brushes of the generator become slightly worn, so that they cause arcing, they should be filed to make a good contact with the commutator. A small magneto file is best for this purpose. If the commutator itself proves to be dirty, a piece of fine sandpaper held against it while the generator armature is revolving will clean it off. A mistake frequently made is in adjusting the brushes so that the springs are stretched too much, causing the brushes to heat rapidly by reason of the excessive friction. This causes rapid wear. The brushes should be set so as just to touch the commutator lightly and yet not so much as to give poor contact. The curvature of the brush should be the same as that of the commutator.

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For 15 Days**
on Auto Repair Work and
Overhauling.
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